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## General Notes.

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### GEOLOGY AND PALEONTOLOGY.

#### A Review of the Discovery of the Cretaceous Mammalia.<sup>1</sup>

The following is an abstract of a review of "The Discovery of the Cretaceous Mammalia," presented to the Society of Morphologists, December 30th, 1890. The review is mainly an analysis of the types upon which the author bases his systematic classification of the collection of mammalian teeth and other parts from the Laramie beds. These mammals are provisionally referred by the author to four mammalian orders and eight families, five of which are new to science. Sixteen new genera and twenty-seven new species are also proposed.

It appears that before accepting this system we must eliminate :

1. The terms preoccupied by other authors. 2. The terms founded upon different parts of the same animal, and thus largely preoccupied by the author. 3. The terms founded upon imperfect or indefinite types. 4. The terms founded upon reptilian or ichthyopsidan teeth. This may be expressed as follows :

A. ALLOTHERIA.		. . . . . MULTITUBERCULATA, Cope.		
1.	<i>Cimolomidæ.</i>	}		
	<i>Cimolomys gracilis.</i>			
	<i>Cimolomys bellus.</i>			
	<i>Cimolomys digona</i>			
2.	<i>Cimolodontidæ.</i>			<i>Plagiaulacidæ.</i>
	<i>Cimolodon nitidus.</i>		. . . . .	<i>Cimolomys</i> , 2 or 3 species.
	<i>Nanomys minutus.</i>			
3.	<i>Plagiaulacidæ.</i>			
	<i>Halodon sculptus.</i>			
	<i>Halodon serratus.</i>			
	<i>Halodon formosus.</i>			

<sup>1</sup> The Discovery of the Cretaceous Mammalia. O. C. Marsh, *American Journal Science and Arts*, Parts I. and II., July and August, 1889.

4. <i>Dipriodontidæ.</i>	}	
Dipriodon robustus.		
Dipriodon lunatus.	}	
5. <i>Tripriodontidæ.</i>		
Tripriodon cœlatus.		..... <i>Stereognathidæ.</i>
Tripriodon caperatus.		Meniscoëssus, Cope, 2 species.
Selenacodon fragilis.		
Selenacodon brevis.		
6. <i>Allodontidæ.</i>	}	
Allacodon lentus.		..... Probably preoccupied above.
Allacodon pumilus.	}	
Camptomus amplus		..... Probably preoccupied above.
Oracodon anceps.		..... Indefinite type, or preoccupied.
?B. PANTOTHERIA.		..... Not defined.
?7. <i>Dryolestidæ.</i>	}	
?Dryolestes tenax.		..... Determination uncertain.
C. MARSUPIALIA.		..... Order indeterminable.
Didelphops vorax.	}	
Didelphops ferus.		..... Didelphops. Not definable.
Didelphops comptus.		
Cimolestes incisus.	}	
Cimolestes curtus.		..... Cimolestes. Not definable.
D. INSECTIVORA.	}	
Pediomys elegans.		..... Order indeterminable. Genus not defined.
E. INCERTÆ SEDIS.	}	
8. <i>Stagodontidæ.</i>		
Stagodon nitor.		..... Reptilian or ichthyopsidan types.
Platacodon nanus.		

The full analysis upon which these conclusions are based will be published subsequently.

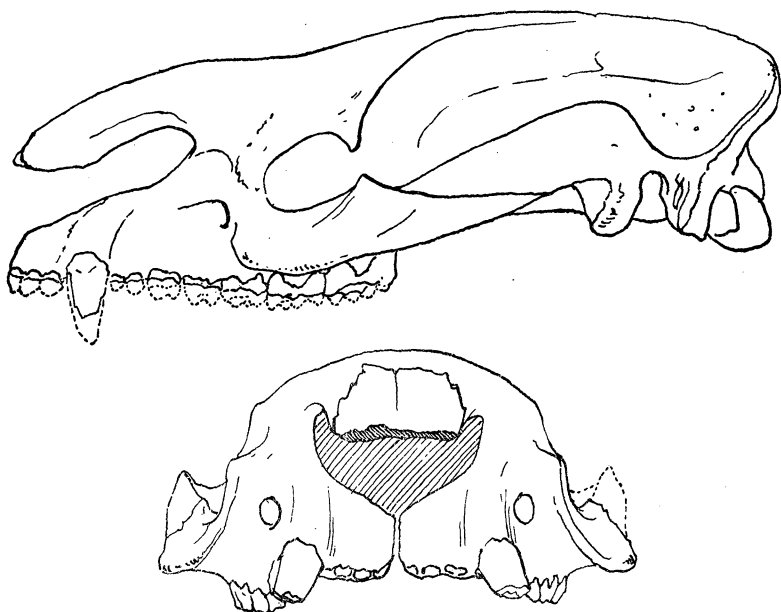
HENRY F. OSBORN.

January 26, 1891.

**On a New Species of Palæosyops.**—*Palæosyops megarhinus*, sp. nov.—This new species of Palæosyops is established upon a fine skull (No. 10,008) in the Princeton collection from the Washakie Eocene of Wyoming; there is also another portion of a skull (No. 10,041), probably belonging to this species, with the occiput well preserved, from the Bridger proper.

*Cranium.*—The characters of this skull are quite unique, and depart widely from any of the species of the family that I have examined.

The general form of the skull is broad and depressed. Its dorsal contour is very like that of *Palæotherium crassum*,—namely, there is no frontal depression, which is so characteristic of *Palæosyops paludosus*, and the occipital region is only slightly higher than the frontal. The temporal fossæ are not deeply excavated, and the occipital crests are weakly developed when compared to this region of the skull in *Limnomyops*. The occiput itself is high and rather narrow. The foramen magnum is wide, bordered by very large condyles. The auditory processes are widely separated. The post-tympanics are broad and heavy. The post-glenoid is peculiar in form; it is very short and



*Palæosyops megarhinus*, sp. nov.; anterior and lateral view of skull; from the Washakie Eocene of Wyoming.

thick; its form is very different from other species in the collection. An internal glenoid process is present in this species. The mastoid was probably exposed. The form of the zygomatic arch is striking; it is very light, nearly straight, with the temporal portion strongly compressed. The malar portion is also peculiar; the malar insertion is very abrupt and strongly depressed, with the external part very broad, thin, and shelf-like. The infra-orbital foramen is not exposed. The form of the malar in this species is totally different from all other allied forms

that I have examined. The orbit is very small, terminates anteriorly above the anterior border of the second superior molar; the post-orbital processes are well marked. The facial region of the skull is very short, compared to the total length of the cranium. The nasals are very long and heavy; their distal portion is expanded and broader than the middle part. The nasal notches are very deep and high. The premaxillaries are triangular in outline; their symphysis is short and narrow, with a prominent anterior keel. The canine alveolus is very prominent. The palate is long and narrow, the roof of the same being strongly arched. The posterior termination of the palate is at the second superior molar. The incisive foramina are not divided.

*Teeth.*—The crowns of the teeth in this skull are badly damaged, but enough remains to give the total measurements and the characters of the last molar. The superior molars in this species form a continuous series, being not interrupted by a diastema. The sections of the incisors are very small. The canines are also very small, and diverge widely. Only the second and third molar of each side are partially preserved. They have a square form with low crowns; externally they are totally without a cingulum. The external V's are rather wide and angular, in this respect approaching that of *Telmatotherium*. The last molar is without any intermediate conules.

<i>Measurements.</i> —1. Length of skull, from premaxillary symphysis to end post-glenoid . . . . .		.285
2. Length from orbit to premaxillary symphysis . . . . .		.125
3. Length from orbit to post-glenoid . . . . .		.160
4. Depth of nasal notch . . . . .		.084
5. Length of nasals . . . . .		.100
6. Entire molar series . . . . .		.148
7. Last super. molar { ant. post . . . . .		.037
{ trans. . . . .		.039

*E. M. Museum, Princeton College.*

CHARLES EARLE.

**On Two New Perissodactyles from the White-River Neocene of Nebraska.**—Dr. Hobart Hare, of the University of Pennsylvania, recently presented to the Museum of the University a collection of fossils from the White-River Neocene beds of Northern Nebraska. This includes parts of skeletons of *Stylomys nebrascensis* Leidy, and *Menodus americanus* Leidy, with some others, among which are two species evidently new to science. One of these is a rhinoceros of the genus *Cœnopus* Cope, of larger size than any of those hitherto known, and the other is a remarkable species of *Menodus*, which is

characterized by a development of the horn-cores so far unique in the genus. I characterize it under the name of

MENODUS PELTOCERAS sp. nov.—Represented by the nasal region and the horn-cores; the apex of one of the latter being broken away. The peculiarity of the species consists in the immense transverse extent of the horn-cores, and their complete fusion into an osseous wall which extends across the muzzle, forming a huge plate or shield. The superior border of this shield is moderately concave, a protuberant angle on each side representing the apex of each horn-core. The nasal bones form a flattened protuberance much wider than long, which overhangs the nares. Their superior wall slopes directly upwards from the obtuse apex to the crest of the horn-core-plate. The expanse of the base of each horn-core outside of the nares is as wide as the nasal meatus, is flattened from before backwards, and has a narrow external margin. The horn-core-plate is vertical behind at the slightly angulated middle line, and is moderately concave on each side, the apex being slightly recurved. Measurements: Elevation of horn-core-plate at middle line behind, 180 mm.; do. at lateral apex, 190 mm.; total width of do. at middle, 300 mm. Projection of nasal bones beyond lateral base of horn-core-plate, 20 mm.; width of nasal meatus at base of nasal bones, 65 mm.; width of base of horn-core-plate outside of nasal meatus, 90 mm. Anteroposterior diameter of base of horn-core above side of and parallel to nasal meatus, 85 mm. This species is nearest the *M. platyceras* S. & O., which has transverse compressed horn-cores. They are, however, distinct from each other, and not nearly so expanded transversely as in the present form. The *M. peltoceras*, in fact, carried a transverse shield on the end of its nose, which must have given it an extraordinary appearance.

CÆNOPUS SIMPLICIDENS sp. nov.—Represented by the last two superior molars of the left side, with a probable humerus and femur. The molar teeth are one-third larger in linear dimensions than those of the *C. occidentalis* Leidy, and lack the external basal cingulum which is present in the corresponding teeth of that species. Internal cingulum wanting, but the anterior and posterior cingula present. The posterior limb of the metacone is represented in the posterior molar by a tubercle at the base of the crown, which rises into a low ridge which soon disappears. It bounds a fossa with the posterior cingulum just behind it. Transverse crests simple, with a convexity representing the anti-crochet. Paracone distinct, separated by an open groove from the anterior angular cone. Both limbs of the metacone of the penultimate molar are well developed. Measurements: Transverse diameter

of M. ii. at anterior cross-crest, 48 mm.; do. at posterior cross-crest, 38 mm.; do. of M. iii. at anterior cross-crest, 45 mm.; anteroposterior diameter of do. at inner base of crown, 42 mm.—E. D. COPE.

**The Tertiary Formations of Western Texas.**—Mr. Robert T. Hill has made brief mention in three short papers<sup>1</sup> of a very interesting fact concerning the age of the Staked Plains, and the extent of the fresh-water Tertiary formations of the West eastward into the Texas region. The whole of the great mesa known as the Llano Estacado and some of the basins of the Trans-Pecos region, near El Paso, are composed of the sandy loams, grits, and pebbles of this formation. This area in Western Texas and Eastern New Mexico extends in places eastward to the one hundredth meridian, and is a direct continuation southward of the same formation in Kansas and Nebraska. Its southern limit on the Rio Grande is near Del Rio, and the whole area, which is as large as New England, has hitherto been colored Cretaceous and Jurassic upon previous maps. The formation has afforded fossil bones in various places; but these as yet have been unstudied. It rests unconformably upon the Comanche series, the Jura Trias, and the various rocks in the mountain ridges. Everywhere at its base it affords an abundant supply of well water, which has proved of great value to the settlers who are now rapidly locating on the Staked Plains. The Fort Worth and Denver road traverses the formation from Clarendon to Tascosa, and the Texas Pacific from Sweetwater to the Colorado valley, and from thence westward. This additional knowledge upon the former extent of the great inland lakes of Tertiary times is important in that it nearly doubles the areal extent hitherto acknowledged, and enables us to locate the narrow continental divide between the Gulf of Mexico and the Tertiary lakes with greater accuracy. Dr. Otto Lerch has corroborated the extent of these beds in a recent article on the Concho country, in the *American Geologist* for 1890. The great development of this terrane in Southern New Mexico, was pointed out by Prof. Cope, in the Proceedings of the Amer. Philos. Society, 1883, p. 308.

**The Eighth Volume of Reports of the Geological Survey of Illinois** left the press in July last. The general distribution of the edition—5,000 copies—must, however, be postponed until the Legislature of the State will have provided for its binding. Only fifty copies have been bound in advance, and we have received one of them. We will give a full notice in future number of the *NATURALIST*.

<sup>1</sup>Notes on the Geology of Western Texas. Bulletin Texas State Geological Soc., September, 1888. Pro. Am. Ass. Adv. of Science, Toronto, 1889.—Topography and Geology of Texas Region. *Am. Geologist*, Jan., 1890.

*Am. Nat.*—January.—4.